XXII. *An Account of a Pair of hinder Hands of an Orang Otang, deposited in the Collection of the Trinity-House, Hull. By John Harwood, M.D., F.R.S. and L.S. Communicated by the Zoological Club of the Linnean Society.*

Read June 19, 1827.

In viewing the collection belonging to the Trinity-House, Hull, being no less interested than surprised by the extraordinary size and appearance of a pair of the hinder hands of an Orang Otang contained in a glass vessel, I became anxious to obtain all the information possible concerning them; and I have now the pleasure of laying it before the Linnean Society.—On the 5th of June 1822, Captain John Anderson, (since deceased,) master of the ship Lord Wellington, of Hull, presented to the Board (to use the words contained in his letter to them) "two of the feet of an Orang Otang, which had been presented to him in the year 1821 by the native Sultan of Pontianna in Borneo, in whose family they had remained as a great curiosity during 154 years. This chief," he continues, "is remarkably fond of the English nation; and added, in presenting them to me, that the apparent strength of the feet of this animal would indicate the power of his attachment to them and their interests." Such, then, is the only portion of history I have been enabled, or am likely, to collect concerning these specimens. In confirmation of the above account, on visiting the residence of the late

Captain Anderson, to obtain further information on the subject, a great many other curiosities were shown to me, for which he had been indebted to the munificence of the same chief.—It now then becomes necessary to point out more especially what I conceive to be the peculiar claims of these specimens to our attention.

Though very materially shrunk in bulk, from a styptic solution in which they have been preserved, they are, in the first place, even at present, larger than any similar specimens of which I have seen any well-authenticated description: for while Dr. Abel in his highly interesting account of the gigantic Orang Otang, killed at Ramboom in Sumatra, which he computes to have measured 7 feet 6 inches in height, states it to have had hinder hands which measured 14 inches in length,—these specimens extend no less than 15 inches and a quarter. Notwithstanding considerable contraction in their circumference over the knuckles, they still exceed the admeasurement of his more recent specimens by a quarter of an inch, being 10 inches, while the middle toe of ours, from the knuckle, exceeds his by an inch and three-quarters, being the enormous length of 7 inches and three-quarters. The length from the metatarsal bone of the fore-finger to the end of the thumb, which is placed at nearly right angles to it, is 5 inches and a half; and from the outer edge of the metatarsus to the end of the thumb, 9 inches. The circumference of the thumb at its extremity is no less than 3 inches and a quarter, and that of the tarsus 11 inches.

The second circumstance worthy of notice is the fact that the thumbs are each destitute of a nail, but they have a hardened protuberance in its place: and thirdly, their upper surface is covered more or less thickly, as far as the last joint of the fingers, with red ferruginous-coloured hair, which about the ankle is several inches in length. The coarse and thick cuticle which

which covers the palms and the inside of the fingers is strongly furrowed by those parallel and spiral lines, which in our own hands, those of the apes generally, and in many of the *Plantigrada*, announce the acuteness of the sense of touch. The skin is of a reddish-brown colour; and the nails, which are about an inch in length, are darker. The thumb, as in all these creatures, is comparatively short, but extremely powerful; and, as before observed, placed nearly at right angles with the metatarsal bones.

These gigantic specimens having thus all the characters which pertain to the hinder hands of the true *Simia Satyrus* of Linnæus, or the Red Orang Otang of the Eastern Islands, of which very young individuals have occasionally been brought to Europe, it becomes a question, whether we are to refer them to that species; whether we should regard them as belonging to a species very similar, yet distinct from that animal, as the Pongo, described by Worms, has been thought to be; or whether we should consider these two animals, the *Simia Satyrus* and the Pongo, to be the same species of different ages, as they have been supposed to be by Cuvier, Desmarest, and others, who regard the Pongo as the adult animal. Now, certain it is that they very closely resemble each other in many of their characters; and I should be strongly inclined to acquiesce in this latter supposition of their identity, could difficulties be overcome which have arisen from an examination of several skeletons of Orang Otangs, for opportunities of doing which, I am especially indebted to Mr. Clift and Mr. Brookes.

Among these difficulties, the most important arises from a difference in the number of the vertebræ; for in the perfect skeleton of the Pongo at the Royal College of Surgeons, I find five lumbar vertebræ instead of four, which latter is the number in all the specimens of *S. Satyrus* that have fallen under my

observation. There is a considerable difference in the clavicles: in the Pongo they are much straighter and of a different form, as was particularly observable in a specimen belonging to that kind and munificent promoter of natural science, the late Sir Stamford Raffles. The scapulæ of the Pongo have their spine strongly incurvated upwards, while in the *Simia Satyrus* it pursues almost a straight direction horizontally: the space also for the attachment of the *infrà spinatus* muscle is, relatively to the size of the bone, far more extended in the Pongo. In regard to the form of the skull, there are differences between these animals so decided as particularly to claim our attention, especially as I am not aware that they have been before noticed. The nasal bones in both animals are perfectly flat and do not at all project forwards, and are ossified together at a very early age; but the antrum is a cavity of far greater dimensions and developement in the *Satyrus* than in the Pongo, where it can be hardly said to exist at all,—a circumstance which, supposing the latter to be the adult *Satyrus*, is the reverse of what takes place in other animals. But the most distinguishing difference relates to the proportions of the orbits, and the space which separates them. They are of by far the greatest proportionate size in the *Satyrus;* for in the very young animal before alluded to, they measure transversely 15 lines and a half, while in the skull of the largest Pongo ever brought to this country, they extend no more than 17 lines and a half. But the difference in the extent of the space between the orbits is of all the distinctions I have seen the most apparent; for in the *Satyrus*, where the transverse extent of the orbits is 15 lines and a half, and the vertical 17 and a half, the space between the orbits is only 2 lines and a half; and in the still younger *Satyrus* at the Royal Institution, where the transverse diameter is 13 lines and a half, this space measures only 2 lines, or less than one-sixth; while in the Pongo, where the same

same diameter is 17 lines and a half, it is no less than 7 lines and a half, or nearly equal to *one-half the breadth of the orbit*. Neither is the orbit itself in these animals placed on the same plane; but while almost vertical in the *Satyrus*, it forms in the Pongo an angle with the horizon of many degrees less. These then appear to be some of the most important distinctions. In their absence, indeed, the many others which exist in the form of the skull of these animals might be attributable to age; for although those of the *Satyrus* seen in Europe have the skull round and smooth, and the facial angle large (as is so well exemplified in the skeletons at the Royal Institution, Mr. Brookes's, and at the College of Surgeons), while in the Pongo the skull is angular, provided with sharp ridges or crests, and the facial angle much smaller, such differences, though less apparent, are seen between the young and old of most other quadrupeds.

In addition to other arguments mentioned in favour of the identity of the two animals, the French naturalists assert that the vertebræ of each kind are the same in number. This conclusion they seem to draw from the large skeleton of the Pongo in the collection of Comparative Anatomy at Paris, but which, being obviously imperfect in several of its parts, I am much inclined to consider is deficient in one of its lumbar vertebræ. They then state all the proportions of the body and limbs to be similar, each to be destitute of the hinder thumb-nail; each to have large cavities communicating with the larynx, and of the same form; neither to possess callosities; and that the colour differs only in being darker in the Pongo, as we see it in most adult animals. We also know that they inhabit the same country. To these arguments I may with justice add, that the adult *Simia Satyrus*, as distinct from the Pongo, has never been accurately described; and that the *Simia Satyrus* seen here is evidently the young of a large species, as is determined by the loose

loose and porous texture of its bones, and the cartilaginous nature of their extremities.

I cannot suffer the present opportunity to pass by, without suggesting the possibility of Dr. Abel having been materially deceived in his estimate, taken from the dried skin, of the height of his animal, which he computes at no less than 7 feet 6 inches; for he calculates, that the extent of his reach from finger to finger across the chest did not exceed 8 feet 2 inches; whereas in the skeleton of the Pongo at the College of Surgeons, whose arms I believe to be shorter in proportion to its height than in the true *Satyrus*, and which is probably the same species he has described, —in this Pongo I find the extent of reach to be not less than 7 feet, and yet its height does not exceed 3 feet 11 inches: and consequently, if what I have presumed be found correct, were it a *Satyrus* instead of a Pongo, with a reach of 7 feet, its height would scarcely exceed 3 feet and a half. It is highly worthy of notice, as relating to the proportions of Orang Otangs, that with a reach of 7 feet, each arm being 3 feet 1 inch in length, this Pongo measures only 2 feet 2 inches from the summit of the head to the extremity of the *os coccygis*, and only 1 foot 10 inches in the length of its hinder extremities, or from the top of the head of the *os femoris* to the under surface of the *os calcis*. The hinder hand of this creature is at the same time no more than 2 inches shorter than that of the animal described by Dr. Abel, being 12 inches in length.

From the capacity and form of the pelvis, and other circumstances, I have reason to believe the skeleton at the College of Surgeons to be that of a female, while there is as strong evidence that Cuvier's larger skeleton of the same species is that of a male. Having been favoured with accurate admeasurements made of the Parisian specimen by Mr. Clift, it may not be considered irrelevant to our subject to compare some of its proportions with those of

of the former. It exceeds ours in height by 6 inches, having an altitude of 4 feet 5 inches instead of 3 feet 11: yet, as its arms each measure 39 inches and a half, instead of 37 inches, and as its chest is broader, its relative height to that of its reach I find to be precisely the same,—the latter being a little under 8 feet. In its length from the summit of its head to the extremity of the *os coccygis*, it is exactly the same as ours, being 2 feet 2 inches; and the length of its hinder hands is precisely similar, being 12 inches. Its bones are however thicker and stronger in proportion, the head of the humerus measuring 6 inches and one-eighth in circumference, and that of the chest at the lower part of the sternum no less than 37 inches.

In regard to the relative length of the arms in the Pongo and the *Satyrus*, it stands thus. In the *Satyrus*, when young, the fingers may be observed literally to drag upon the ground like those of the Gibbons, though the creature be placed erect; while in the Pongo the fingers scarcely reach to the external maleolus. Slight differences of this kind undoubtedly take place during the growth of animals; yet those who suppose the Pongo to be the adult animal, must be prepared to contend for a much greater change in the relative proportions of parts during growth than can be admitted in other cases. Having mentioned the erect position, it is almost unnecessary to add, that it is altogether unnatural to these creatures; and that although we see their skeletons constantly distorted into human attitudes, one grand characteristic between them and us is the impossibility of their thigh-bone being brought, by fair means or by the action of their own muscles, into the same line as that of the spine. In all inferior creatures, it is observed to form with it an angle of greater or less magnitude, which is the most convincing of all proofs, that their hinder extremities alone were never destined for the support of their bodies.

From

From the evidence which has been thus briefly adduced, I shall in concluding only further observe, that I consider the differences mentioned fully sufficient to disprove the identity of the *Simia Satyrus* with the Pongo, though they are at the same time very closely allied to each other. The specimens of the hands which I have taken the liberty of bringing under your notice, may most probably have belonged to the former animal, in which case they afford a very imposing example of his vast physical powers, when allowed to attain mature age in the shady recesses of his native forests.

XXIII. *Ex-*